5. **(Previously presented)** An encapsulation vesicle as recited in claim 1, wherein said fluorescent molecule is an organo-metallic complex, and wherein the matrix surface is modified with amino groups so that the organo-metallic complex can be covalently attached to the matrix surface.

6. **(Canceled)**

7. **(Canceled)**

8. **(Previously presented)** An encapsulation vesicle as recited in claim 1, wherein said fluorescent molecule is an organo-metallic complex.

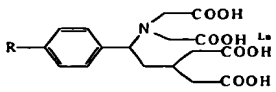
9. **(Canceled)**

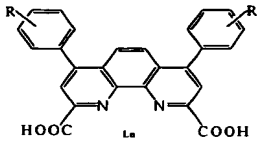
10. **(Previously presented)** An encapsulation vesicle as recited in claim 8, wherein said organo-metallic complex is a ruthenium tris diphenyl phenanthroline complex.

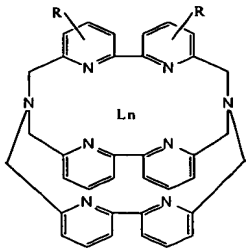
11. **(Previously presented)** An encapsulation vesicle as recited in claim 8, wherein said organo-metallic complex has an emission maximum at about 650 nm.

12. **(Canceled)**

13. **(Previously Presented)** An encapsulation vesicle as recited in claim 8, wherein said fluorescent donor molecule is selected from the group consisting of:







where Ln is selected from the group consisting of Eu, Tb, Sm, and Dy; and R represents H or a functionality capable of covalently linking to the surface of said matrix.

14. **(Previously presented)** An encapsulation vesicle as recited in claim 8, wherein said fluorescent molecule has a fluorescence lifetime greater than 100 nanoseconds and is susceptible to collisional quenching by oxygen.

15. **(Previously presented)** An encapsulation vesicle as recited in claim 2, wherein said protection layer comprises a material that is translucent to said fluorescence.

16. **(Previously presented)** An encapsulation vesicle as recited in claim 2, wherein said protection layer comprises a material that is transparent to said fluorescence.

17. **(Previously presented)** An encapsulation vesicle as recited in claim 2, wherein said protection layer comprises a sol-gel material.

18. **(Original)** An encapsulation vesicle as recited in claim 2, wherein said

protection layer is modified with hydrophilic functionalities selected from the group consisting of hydroxyl, carboxyl and protonated amines.

19. **(Original)** An encapsulation vesicle as recited in claim 2 that was formed by suspension polymerization.

20. **(Currently amended)** An encapsulation vesicle as recited in claim 37, wherein said ligand comprises an acceptor molecule that is capable of absorbing fluorescence that has been emitted from said fluorescent ~~donor~~ molecule.

21. **(Previously presented)** An encapsulation vesicle as recited in claim 1 for use in a fluorescence energy transfer immunoassay.

22. **(Canceled)**

23. **(Previously presented)** An encapsulation vesicle as recited in claim 20, wherein an absorption band of said acceptor molecule overlaps with an emission band of said fluorescent molecule.

24. **(Previously presented)** An encapsulation vesicle as recited in claim 20, wherein said acceptor molecule is selected from the group consisting of fluorescein, Cy5 and allophycocyanin.

25. **(Previously presented)** An encapsulation vesicle as recited in claim 37, wherein said ligand is an antibody.

26. **(Previously presented)** An encapsulation vesicle as recited in claim 21, wherein said fluorescence energy transfer immunoassay is a sandwich assay.

27. **(Previously presented)** An encapsulation vesicle as recited in claim 37, wherein said ligand is selected from the group consisting of proteins, DNA,

RNA, polypeptides, aptamers and receptor molecules.

28. **(Canceled)**

29. **(Canceled)**

30. **(Canceled)**

31. **(Canceled)**

32. **(Previously presented)** An encapsulation vesicle as recited in claim 21, wherein said fluorescence energy transfer immunoassay is a competitive binding assay.

33. **(Previously presented)** An encapsulation vesicle as recited in claim 1 for use in a DNA or RNA fluorescence energy transfer hybridization assay.

34. **(Previously presented)** An encapsulation vesicle as recited in claim 1 for use in a fluorescence energy transfer binding assay between a ligand and a receptor.

35. **(Previously presented)** An encapsulation vesicle as recited in claim 34 for use in a fluorescence energy transfer binding assay between an aptamer and a protein.

36. **(Previously presented)** An encapsulation vesicle as recited in claim 1, wherein said fluorescent molecule is selected from the group consisting of cyanines, oxazines, thiazines, porphyrins, phthalocyanines, fluorescent infrared-emitting polynuclear aromoatic hydrocarbons, phycobiliproteins, squaraines and organo-metallic complexes.

37. **(Previously presented)** An encapsulation vesicle as recited in claim 1

further comprising a ligand attached to said protection layer.

38. **(Previously presented)** An encapsulation vesicle as recited in claim 37, wherein said ligand is an antigen.

39. **(Previously presented)** An encapsulation vesicle as recited in claim 2, wherein said protection layer comprises silica and synthetic polymer.

40. **(Previously presented)** An encapsulation vesicle as recited in claim 20, wherein said acceptor molecule is selected from the group consisting of Fast green and Light green SF yellowish.

41. **(Previously presented)** An encapsulation vesicle as recited in claim 20, wherein said acceptor molecule is selected from the group consisting of cyanines, oxazines, thiazines, porphyrins, phthalocyanines, fluorescent infrared-emitting polynuclear aromatic hydrocarbons, phycobiliproteins, squaraines, organo-metallic complexes, and azo dyes.

42. **(Previously presented)** An encapsulation vesicle as recited in claim 1 further comprising an acceptor molecule attached to said protection layer, wherein said acceptor molecule is capable of absorbing fluorescence that has been emitted from said fluorescent molecule.

43. **(Previously presented)** An encapsulation vesicle as recited in claim 42, wherein said acceptor molecule is selected from the group consisting of Fast green and Light green SF yellowish.

44. **(Previously presented)** An encapsulation vesicle as recited in claim 42, wherein said acceptor molecule is selected from the group consisting of fluorescein, Cy5 and allophycocyanin.

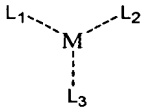
45. **(Previously presented)** An encapsulation vesicle as recited in claim 42,

wherein said acceptor molecule is selected from the group consisting of cyanines, oxazines, thiazines, porphyrins, phthalocyanines, fluorescent infrared-emitting polynuclear aromatic hydrocarbons, phycobiliproteins, squaraines, organo-metallic complexes, and azo dyes.

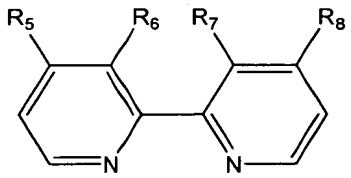
46. **(Previously presented)** An encapsulation vesicle as recited in claim 42, wherein an absorption band of said acceptor molecule overlaps with an emission band of said fluorescent molecule.

47. **(Previously presented)** An encapsulation vesicle as recited in claim 1, wherein said fluorescent molecule is susceptible to collisional quenching by oxygen and said protection layer reduces the diffusion of oxygen into said surface coating.

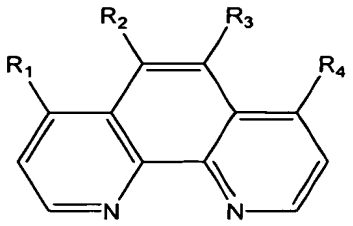
48. **(Previously presented)** An encapsulation vesicle as recited in claim 8, wherein said fluorescent molecule is:



where M is selected from the group consisting of Ru, Os and Re; and L_1-L_3 are each independently selected from the group consisting of:

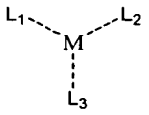


and

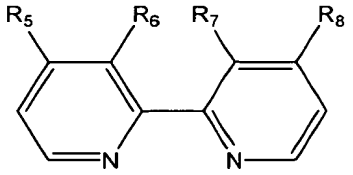


where R_1-R_8 are each independently selected from the group consisting of H, alkyl and aryl.

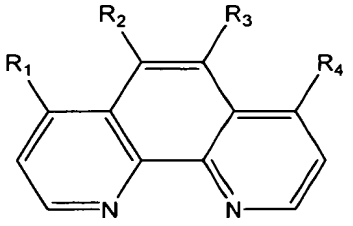
49. **(Previously presented)** An encapsulation vesicle as recited in claim 8, wherein said fluorescent molecule is:



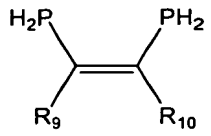
where M is Os;
L_1 is:



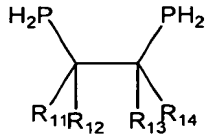
; or



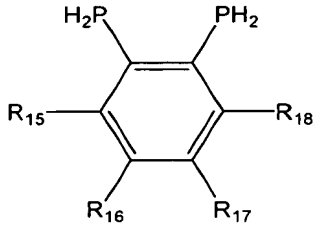
; and L_2 and L_3 are independently selected from the group consisting of:



;



; and



where R_1-R_{18} are each independently selected from the group consisting of H, alkyl, and aryl.